

1. An ice screw for use in ice climbing, said ice screw comprising:
a hollow shaft having a plurality of screw threads formed thereon for securing
said ice screw to a body of ice;
a hanger coupled to said hollow shaft for receiving a carabiner and supporting a
5 climber; and
a flexing crank handle coupled to said hanger in a substantially stationary manner,
said flexing crank handle functioning as a crank arm for screwing said ice
screw into said body of ice, said flexing crank arm also displacing or
flexing from a resting position to one or a plurality of flexed positions in
10 response to a load induced thereon.

2. The ice screw of claim 1, wherein said flexing crank handle comprises a
mechanism for facilitating displacement and flexing of said flexing crank handle, said
mechanism comprising:
15 crank support means for attaching said flexing crank handle to said hanger;
a flexing member operable with said crank support means, said flexing member
allowing said flexing crank handle to flex and displace in response to an
induced load; and
a sleeve rotatable about said flexing member.

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3. The ice screw of claim 2, wherein said flexing member comprises a compression
spring supported within said sleeve and pre-loaded using a plunger attached to said

attachment means that fits within said sleeve, said spring having a pre-determined stiffness.

4. The ice screw of claim 2, wherein said flexing member comprises a spiral spring.

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5. The ice screw of claim 2, wherein said flexing member comprises complimentary solid height coil springs attached opposite one another on said hanger.

6. The ice screw of claim 2, wherein said flexing member comprises a solid height coil spring attached within a recess formed in said hanger.

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7. The ice screw of claim 2, wherein said flexing member comprises a wire torsion spring.

8. The ice screw of claim 2, wherein said flexing member comprises an internal coil spring.

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9. The ice screw of claim 2, wherein said crank support means is selected from the group consisting of a rigid rod pivotally attached to said hanger and a flexible material.

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10. The ice screw of claim 1, wherein said crank support means comprises a flexing member attached to said hanger, wherein said flexing member is selected from the group consisting of a string, a cable, a semi-rigid material, or any other similar flexing element.

11. The ice screw of claim 1, wherein said hanger further comprises a flex boundary that dictates the flex path of said flexing crank handle and supports said flexing crank handle in said resting and said plurality of flexed positions.

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12. The ice screw of claim 11, wherein said flex boundary of said hanger comprises a flat and a radius portion for supporting said flexing crank handle in said resting, cranking position and said plurality of flexed positions, respectively.

10 13. The ice screw of claim 11, wherein said flex boundary comprises support surfaces of varying pre-determined distances from an attachment point of said flexing crank handle on said hanger, such that as said flexing crank handle follows along said support surfaces of said flex boundary from said resting position to one or more of said flexed positions, said flexing crank handle increases in potential energy, thus causing said
15 flexing crank handle to snap back to its said resting position when said load is removed.

14. The ice screw of claim 12, wherein said radius portion is positioned an identified, pre-determined distance from a pivot point on said hanger, and wherein said flat is also positioned an identified, pre-determined distance from a pivot point on said hanger, said
20 distance of said radius portion being greater than said flat by a pre-determined amount, thus causing said flexing crank handle to increase in potential energy as it moves along said flex boundary so that when said load is removed, said flexing crank handle springs back into its said resting position.

15. The ice screw of claim 2, wherein said sleeve is a rotating sleeve that rotates about said flexing member.
- 5 16. The ice screw of claim 1, wherein said flexing crank handle reduces cross-loading of an attached carabiner by flexing to allow said carabiner to become disengaged and free itself from said flexing crank handle once said carabiner is loaded.
- 10 17. The ice screw of claim 1, wherein said flexing crank handle comprises bi-directional flexing.
18. The ice screw of claim 1, wherein said flexing crank handle comprises vector flexing.
- 15 19. The ice screw of claim 11, wherein said flex boundary is a multi-vector flex boundary defined by a knob coupled to said hanger, wherein said knob has a semi-spherical surface shape allowing said flexing crank handle to flex in any direction about said surface to achieve vector flexing.
- 20 20. The ice screw of claim 15, wherein said rotating sleeve rotates about a friction-reducing member selected from the group consisting of a bearing, a bushing, and any other similarly functioning device.

21. A flexing crank handle for use with an ice screw, said flexing crank handle comprising:

a crank support means for attaching said flexing crank handle to a hanger of an ice screw; and

5 a flexing member operable with said crank support means, said flexing member allowing said flexing crank handle to flex and displace in response to an induced load.

22. The flexing crank handle of claim 21, further comprising a sleeve coupled to said
10 flexing member at an end opposite that attached to said hanger.

23. The flexing crank handle of claim 21, wherein said sleeve is a rotating sleeve.

24. The flexing crank handle of claim 21, wherein said attachment means is a flexible
15 member.

25. The flexing crank handle of claim 21, wherein said attachment means comprises a rigid rod that pivotally attaches to said hanger.

20 26. The flexing crank handle of claim 21, wherein said flexing member comprises a compression spring.

27. The flexing crank handle of claim 21, wherein said flexing member comprises a spiral spring.

28. The flexing crank handle of claim 21, wherein said flexing member comprises
5 complimentary solid height coil springs attached opposite one another on said hanger.

29. The flexing crank handle of claim 21, wherein said flexing member comprises a single solid height coil spring attached within a recess formed in said hanger.

10 30. The flexing crank handle of claim 21, wherein said flexing member comprises a wire torsion spring.

31. The flexing crank handle of claim 21, wherein said flexing member comprises an internal coil spring

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32. The flexing crank handle of claim 22, wherein said flexing member comprises a compression spring having a pre-determined stiffness and that is supported on at one end by said sleeve, and a plunger for supporting said spring in a pre-loaded condition, said plunger attached to said rigid rod and fitting within said sleeve, said flexing crank handle
20 comprising a resting position and a plurality of flex positions defined as said flexing crank progresses about a designated and pre-determined flex boundary defined by said hanger.

33. . A method for correcting existing and potential cross-loading of a carabiner coupled to an ice screw inserted into a body of ice, said method comprising the steps of:

obtaining an ice screw, said ice screw comprising:

a hollow shaft having a plurality of screw threads formed thereon for

5 securing said ice screw to a body of ice;

a hanger coupled to said hollow shaft for receiving a carabiner and

supporting a climber; and

a flexing crank handle coupled to said hanger in a substantially stationary

manner, said flexing crank handle functioning as a crank arm for

10 screwing said ice screw into said body of ice, said flexing crank

arm also displacing or flexing from a resting, cranking position to

one or a plurality of flexed positions in response to a load induced

thereon;

grasping said flexing crank handle and screwing said ice screw into said body of

15 ice; and

coupling a carabiner to said hanger, said flexing crank handle is caused to

displace and flex in the event of cross-loading of said carabiner, wherein

said flexing allows said carabiner to disengage and free itself from said

flexing crank handle to assume a normal operating orientation.

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